

5003-02

IN THE SPECIFICATION:

Please amend the paragraph beginning at **line 1 of page 103** to read as follows:

--FIG. 51 illustrates certain optical principles of concern to an integrated optical/electronic circuit 103 design. The waveguide 106 has a refractive index of  $n_{Si}$  while the light coupling portion 5110 formed from silica has a refractive index of  $n_i$ . The angle at which light in the light coupling portion 5110 contacts the gap portion 5106 is  $\theta_i$ . By comparison, the angle at which the light enters the waveguide 106 is the mode angle,  $\theta_m$ . The mode angle  $\theta_m$  varies for each mode of light traveling within the waveguide. Therefore, if the waveguide 106 can support one or more waveguide modes, there will be a plurality of mode angles  $\theta_{m1}$ ,  $\theta_{m2}$ , ... and  $\theta_{mx}$  depending on the number of modes. For example, a region of the waveguide 106 in one embodiment has a height of  $0.2\mu$  formed from silicon that is surrounded by the evanescent coupling region 5106 and the first electrical insulator layer 104 (both of which are formed from glass), supports only a single TE mode angle  $\theta_m$  of approximately 56 degrees. The requirements for incident light is that the incident angle  $\theta_i$  satisfies equation 23:

$$n_i \sin \theta_i = n_{Si} \sin \theta_m$$

23

where  $\theta_m$  is the mode angle of any particular mode of light.--

Please change the paragraph beginning at **line 16 of page 103** to read as follows:

--There are specific requirements for the index of the evanescent coupling region 5106, also known as the gap region. The refractive index of the evanescent coupling region 5106 has to be very close to that of the upper cladding of the waveguide 106. In general, the upper cladding of the waveguide 106 will be one of the often-used materials such as glass, polyamide, or other insulators used in construction of active electronics. The evanescent coupling region 5106 may be made from the same material, air, or filled with a polymer-based adhesive that has a similar refractive index. It is desired for the waveguide to have very close to the same effective mode index in the regions adjacent the evanescent coupling region 5106 as in regions remote from the evanescent coupling region 5106.--